

Notice of Allowability

Application No.

10/786,840

Examiner

Kevin M. Bernatz

Applicant(s)

IKEDA ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to interview of 6/13/07.
2. ☒ The allowed claim(s) is/are 1,2,7,10 and 17-20.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 20070613.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Examiner's Amendment

1. An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Authorization for this Examiner's amendment was given in a telephone interview and/or FAX request with Mr. Josh Snider on June 8 and June 13, 2007.

The application has been amended as follows:

- Claim 1, at the end of the claim, the following phrase was inserted:
", wherein a diffraction intensity ratio $I_{(211)}/I_{(110)}$ of each of the magnetic layers is 10 – 100%, and wherein a thickness of each of the magnetic layers is 20 – 380 nm";
- Claim 17, at the end of the claim, the following phrase was inserted:
", wherein a diffraction intensity ratio $I_{(211)}/I_{(110)}$ of each of the magnetic layers is 10 – 100%, and wherein a thickness of each of the magnetic layers is 20 – 380 nm"; and

- Replace the 2nd full Paragraph on page 16 of the specification with the following amended paragraph:

"Therefore, crystal structures which are not extremely orientated to (110) or (211) are required so as to limit the H_{ch} and the Br_h/B_{sh} low. Then, the preferred diffraction intensity ratio $I_{(211)}/I_{(110)}$ is 2-100 %. If crystals are randomly orientated when the FeCo layers are continuously formed, crystal magnetic anisotropy is averaged, and effect magnetic anisotropy can be effectively reduced. Therefore, low coercivity can be realized. Further, by continuously forming the FeCo layers, the B_s of the [FeCo] FeCo layers can be gained. In the experiment, the B_s of Fe₇₀Co₃₀ was 2.4-2.45T."

Reasons for Allowance

3. The present claims are deemed allowable over the references of record since the references of record fail to disclose or render obvious the unexpected behavior observed for a laminated magnetic film for a magnetic head comprising an underlayer meeting the claimed material limitations and a magnetic layer meeting the claimed thickness and diffraction intensity ratio $I_{(211)}/I_{(110)}$ limitations (*Figures 7 – 13 and Pages 14 – 16 of specification*).

While the prior art of record disclose or render obvious magnetic films comprising an anisotropy magnetic film, H_k, or a saturated magnetic field, H_s, meeting the claimed limitations, the Examiner notes that the prior art of record fails to teach or render

obvious the unexpected improvement/behavior observed by Applicants for a laminated magnetic film possessing the claimed property limitation in combination with the claimed diffraction intensity ratio $I_{(211)}/I_{(110)}$ and magnetic layer thickness.

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Examiner's Comments

5. In order to better clarify the record, the Examiner wishes to point out the rejections under 35 U.S.C. 112 1st Paragraph were withdrawn upon further consideration, as being sufficiently supported by the as-filed disclosure given the knowledge in the field of the property – the saturated magnetic field, H_s .

Kamijo (U.S. Patent No. 5,589,278) disclose a laminated magnetic/non-magnetic structure possessing a saturated magnetic field, H_s ; meeting the claimed limitations (*Figures and Table 3*), but fails to teach or render obvious the unexpected results noted above.

Ikeda et al. (U.S. Patent App. No. 2002/0150790 A1) disclose a soft magnetic film possessing an anisotropy magnetic field, H_k , of 20 Oe or larger (*Figure 11*), but fails to teach or render obvious the unexpected results noted above.

Iwasaki et al. ('026), of record, discloses both H_k and H_s values meeting the claimed limitations (*Figures 24, 25 and 32*), as well as disclosing that H_k is a relative

measure of the anisotropy of the film, i.e. how oriented the film is (*col. 15, line 56 bridging col. 16, line 62*). However, Iwasaki et al. fails to teach or render obvious the unexpected results noted above.

Balamane et al. (U.S. Patent No. 6,662,432 B2) disclose specific embodiments possessing magnetic films over non-magnetic layers meeting Applicants' claimed material limitations (*Figures; Table III, especially example 12*). However, Balamane et al. fails to teach or render obvious the unexpected results noted above.

Okuno et al. (U.S. Patent No. 5,616,370) disclose specific embodiments possessing laminated magnetic films of a magnetic material and a non-magnetic material meeting Applicants' claimed material limitations (*Figures, col. 3, line 56 bridging col. 4, line 15; and examples*), including specific embodiments possessing H_s values meeting Applicants' claimed magnitude limitations (*e.g. Table 2 and Example 5*).

Saito et al. ('975), of record, disclose magnetic films meeting the claimed H_s limitations (*Figures 2, 13, 18 and 21*), but fails to teach or render obvious the unexpected results noted above.

Okada et al. (U.S. Patent App. No. 2004/0120074 A1) disclose AP coupled magnetic films with non-magnetic materials meeting Applicants' claimed material limitations, wherein the films possess H_s values meeting the claimed magnitude limitations (*Figure 8 and relevant disclosure*). However, Okada et al. fails to teach or render obvious the unexpected results noted above.

Inomata et al. (U.S. Patent No. 5,585,196) disclose magnetic and non-magnetic layer laminates, including a CoFe/Ag laminate, reading on the claimed magnitude of the

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saturation magnetic field, Hs (*example 6*). However, Inomata et al. fails to teach or render obvious the unexpected results noted above.

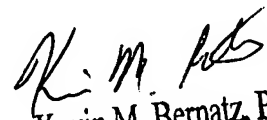
Conclusion

6. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Kevin M. Bernatz whose telephone number is (571) 272-1505. The Examiner can normally be reached on M-F, 8:30 AM - 5:00 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMB
June 12, 2007


Kevin M. Bernatz, PhD
Primary Examiner